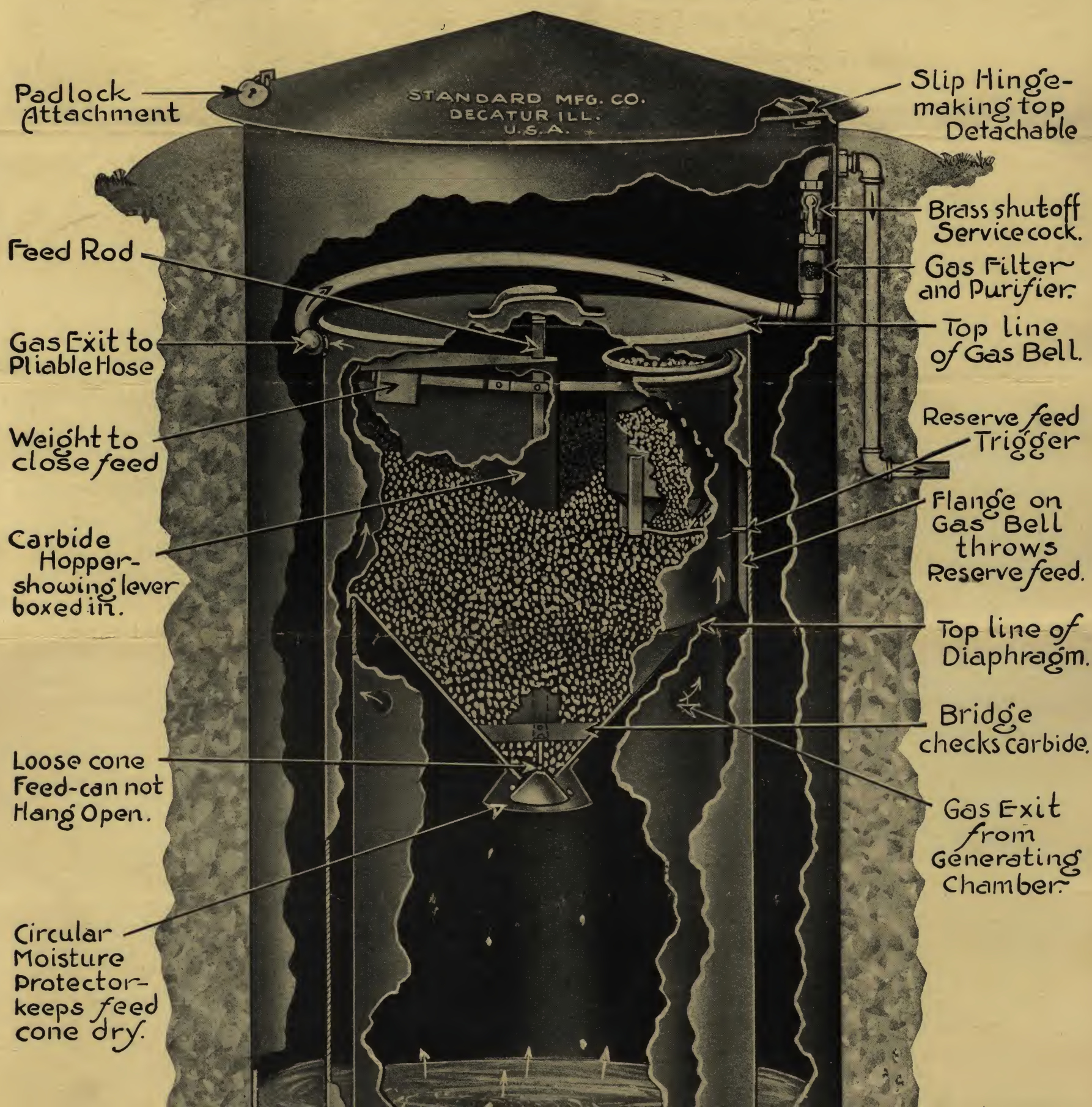
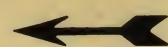


THE GREAT STANDARD PIPELESS GENERATOR



A NATURAL GAS WELL WITH A COLLEGE EDUCATION



Clear Water-
outside of
Diaphragm-
to give 18 in.
Gas Seal-
No gas is
wasted-only
one water
compartment
split by
Diaphragm-
thus
No leaks and
No freezing

DIMENSIONS

200 lb. Generator
Height-8ft. 6 in.
Diam - 30 in.
Built of
Galvanized
Armco Ingot
Iron-
(Rust-Resisting)

63

Detachable
Pump for
Cleaning-
NO EXTRA
CHARGE.



Water line
4 ft. deep -
indicated by
metal tab.

Bottom
line of
Gas Bell

Main Water
Body where
gas gener-
ates.

Diaphragm
extending to
bottom-
showing
spread out
for Sludge
Chamber.
Diaphragm
and all other
parts
detachable
and inter-
changeable.

(PATENTED NO. 1315051—OTHER PATENTS PENDING)

THE BEST LIGHT PLANT ON EARTH

The Only Gas Machine With No Pipes to Clog
Capacity 200 Pounds—Carbide Size 1-4 x 1-12

MANUFACTURED AT DECATUR, ILL., U. S. A., BY

THE STANDARD MFG. CO.

EVERY SUBSTANTIAL HOME SHOULD HAVE A MODERN LIGHT PLANT

In our march from the cave man to civilization:—

First we had the humble cabin with the pine knot or fagot light.

Then came the tallow dip and the candle in the old brass candelabra.

When the oil lamp arrived, we moved another step away from darkness and squalor.

The *Standard Light Plant* brings to your home a lighting and cooking service better than any obtained in the city, and at less expense.

This we will prove by figures and results.

Before you spend several hundred dollars for a modern *Light Plant*, have one of our representatives call and tell you all we know about *Light Plants* of every kind.

You owe it to yourself to make diligent inquiry before you buy.

At this time two kinds of *Light Plants* are usually presented to farmers—*Carbide* and *Electric*.

For a few years the *Gasoline Light Plant* was presented, but this has been found wanting, and is seldom now considered. This leaves the choice between *Carbide* and *Electric*. *The gasoline plant has gone.*

WHY THE ELECTRIC MUST GO

The *Farm Electric Plant* depends on the endurance of from sixteen to twenty-four batteries.

From your experience with automobile batteries you know their average life is about one year. None of them are even guaranteed for four months.

Do you get a better battery in your *Farm Electric Plant* than the best engineers in the world can devise for automobiles? *You do not.*

Yet in your automobile you only burn three very small bulbs occasionally, and only carry the current a few feet from the battery.

Can you then burn much larger bulbs, and carry the current hundreds of feet on inferior batteries? Can you also hope to run pumps, vacuum cleaners, and all advertised accessories and have the batteries last 10 years? *You can not.*

THE WILLARD BATTERY COMPANY is known as a *Great Authority on Batteries*. They know them better than *we* do and better than *you* do. *Read this letter:*

WILLARD STORAGE BATTERY CO.

CLEVELAND, OHIO

March 24, 1917.

Service Station Letter No. 169

REPLACEMENT BATTERIES FOR DOMESTIC ENGINEERING CO. OR "DELCO" LIGHTING PLANTS

Sooner of later you will have calls for replacement batteries to be used with country home lighting plants manufactured by the Domestic Engineering Co., Dayton, Ohio, (familarly known as "Delco Light"). This applies particularly to the Service Stations located in agricultural communities.

In order to acquaint you with the service demanded from these batteries,

we give below a brief description of the "Delco-Light" Plants and their operating characteristics.

The generating set consists of an air cooled gasoline engine directly connected to a 40 volt 20 ampere shuntwound generator. A switchboard, containing an ampere hour meter, circuit breaker, fuse, lighting service switch and self-starting switch, is mounted on the generator frame. This set is used to charge 16 cell battery. Two sizes of plants are sold, the only difference, however, being in the size of storage battery furnished.

The Exide storage battery furnished with this plant is of the sealed glass jar type, using paste plate elements. The elements are suspended from the cover, there being no bottom rests in the jars. One of the cells, called the "pilot cell," is equipped with two hollow glass balls which by rising and falling, give a rough indication of the specific gravity of the electrolyte. The lower one of these balls has a specific gravity corresponding to that of the electrolyte when the cell is one-half discharged while the specific gravity of the upper one corresponds to that of complete discharge. Consequently, when the lower ball sinks to the bottom it indicates that the battery is one-half discharged and when both are down, the battery is completely discharged. When the charge is half completed, both balls will have risen to the top but the charging current must be continued until the ampere hour needle indicates full charge.

When the generating set has replaced 120% of the number of ampere hours taken out, the needle on the ampere hour meter closes a relay contact which opens the ignition circuit of the engine thus stopping the charge. The plant is also provided with another relay which stops the engine if a battery fuse blows or if there is no current being used in the lighting circuit.

The engine is not equipped with a speed governor or throttle valve so the user has no control over the engine speed or the battery charging rate. The speed of the engine is determined entirely by the load on the generator.


The smaller size plant is equipped with 16 cells of battery rated at 80 ampere hours at an intermittent discharge rate. The actual capacity at the 8 hour rate, according to the Willard Method of rating, is 57 ampere hours. The larger plant, using the same generating set, has a 160 ampere hour battery on the above basis, which according to our rating would be 114 ampere hours at the 8 hour rate.

So much for the description of the plant; now for the operating characteristics:


The gasoline intake pipe of the engine is of such size that when the battery charge is started, the generator will deliver about 20 amperes and when nearing the end of charge, the current drops to about 17 or 18 amperes. There is no way for the user to vary the charging rate. Since the normal charging rate of the small battery is about 9 amperes, this battery is always charged at more than double the proper rate. As no battery can stand such treatment for any great length of time, its life will be comparatively short, which means renewal business for you. It would do no good to put a field rheostat on the generator to reduce the charging rate as this would tend to decrease the load on the engine. Since the engine receives a constant supply of fuel, its speed would increase and the generator in turn would maintain the high charging rate. The 114 ampere hour battery will give normal life since it can absorb the generator output without harm.

On December 9, 1916, we sent you a leaflet giving description and list prices of the type PA batteries which are of the sealed glass jar type. Service Station Letter No. 168 gave your discount at 30-5%. Size PA-7 has a capacity of 80 ampere hours and PA-11 134 ampere hours at the 8 hour discharge rate.

Obviously if the charging characteristics of the Delco Light Plants are such as to harm an 80 ampere hour battery, it would be unreasonable to expect a Willard battery to give much longer life than the user obtained from the battery with which the plant was originally equipped. Therefore, the thing to do is to sell him a battery from which he has a right to expect a reasonable life. This is the only way in which you can get his confidence and retain his friendship.

 We would suggest that you approach a prospect in a case of this kind in the following manner:

First, find out his mental attitude, that is, whether or not he is satisfied with the service given by his first battery. If he is satisfied and is willing to spend \$90.00 to \$100.00, say every two years, for a new one, you can safely sell the same size battery he had, which would be our Type PA-7.

 The chances are, however, if he got only two years life or less from the old battery, that he is very much dissatisfied, especially since some Delco agents are claiming 8 to 10 years life for the batteries. This gives you an opportunity to explain the advantages of a 134 ampere hour battery over an 80 ampere hour. The following arguments may be used to convince him that he should purchase the larger size:

First: Unless he does purchase a larger size, he cannot expect much longer life than obtained from his first battery.

Second: Yearly cost of operation. Assuming that the normal life of a battery is 360 cycles; that through abuse an 80 ampere hour battery will only give 150 cycles, and that the man's conditions are such that an 80 ampere hour battery will give 3 days' service on one charge, the following comparison of yearly cost may be made.

Type PA-7, 80 ampere hour capacity, List Price \$107.20, Consumers price, at 10% discount, \$96.48. 150 cycles extended over a period of three days each, equals 450 days or 1 1/4 years. Annual cost of battery \$77.00.

Type PA-11, 134 ampere hour capacity. List Price \$158.40, Consumers price, at 10% discount, \$142.56. If an 80 hour battery lasts three days per charge, a 134 ampere hour will last five days. 360 cycles extended over a period of five days each, equals 1800 days or five years. Annual cost of battery \$28.50. Saving of \$48.50 per year by purchasing large battery.

Third: Don't forget that a Willard battery with the superior quality which goes with it, will outlast other inferior makes under the same service conditions.


Additional arguments, although of minor importance, are,

Fourth: The 134 ampere hour battery will not have to be charged as frequently, consequently less attention is needed.

Fifth: The voltage regulation obtained from a large battery is better than from a small one. This results in better light, especially near the end of discharge.

Sixth: More power in reserve which can be used to advantage on special occasions.

The above arguments, if properly presented, should get the order. To further assist you, the following cautions should be kept in mind.

 Do not exaggerate your claims regarding battery performance, as nothing is more fatal to obtaining future business. Remember that you want the farmer's starting battery business as well as his lighting plant business which means that he must be regarded as permanent customer. Many of the Delco agents in selling the plant, have claimed that the battery will last ten years and that it can be safely left all winter without attention, as in a summer cottage, but such claims are absurd.

If there are prospects of much business along this line in your locality, it would be a good plan for you to have a sample type PA cell on hand. The five plate size, costing you \$3.39 will show all the essential points.

As we do not approve the pilot cell indicator used on the Exide battery, we cannot furnish cells of this type. We do, however, furnish a hydrometer which is far better for determining the condition of the cells.

Naturally, the prospect will want to know what price you will make him on an exchange proposition. Since the old jars do not correspond to our standard size, they are worthless to us. The scrap lead can be disposed of locally to better advantage than paying freight on it to Cleveland, so the only allowance you can make would be for the salvage value which you can obtain.

Yours very truly,

WILLARD STORAGE BATTERY COMPANY,
H. S. Bentley, Mgr. of Agencies.

HSB 286

Bear in mind that the above letter was written to remind the *Service Stations* of THE WILLARD BATTERY COMPANY to get in line for the Battery expense they say you will awaken to. They say the agents of the *Electric* plants make statements that are *absurd*.

Consider also that you *only* have to run the engine of the *Electric Plant ten hours a week*. There are fifty-two weeks in a year. This *only* makes five hundred and twenty hours a year for you. This equals about sixty working days a year that you waste wearing out a set of expensive batteries.

The Great Public Utilities of the cities have spent twenty years time and many millions of dollars on Electric Lights.

They keep an engine running in triplicate sets, night and day, because they have learned that they cannot successfully use the Battery System.

Can you hope to take a few hundred dollars and no experience and show them how? *You can not*.

These are some of the many reasons why the *Electric Plant* will not survive on the farms.

WHY THE CARBIDE PLANT IS BEST

Carbide Plants were first put in Country Homes about fifteen years ago. These first plants were of small capacity and required frequent attention.

Thousands of the old type Carbide plants were installed on farms. Many of them are still in operation and giving service. They are being rapidly replaced by big Standards, installed outside, where they are safe and easily cleaned.


THE STANDARD PLANT

Now we present the well known STANDARD Pipeless Generator. This is placed underground away from all buildings. It holds 200 lbs. of Carbide and one charge lasts several months when used for Lights only. During all this time no human hand needs touch it. It requires no care, no thought.

The *Carbide Light* is the most satisfactory ever devised. With modern fixtures, the *rays of light* are *thrown down* and *every fixture lights without matches or batteries*.

You can install a small simple "hot plate" and cook quicker than with city gas.

SPECIAL TEST OFFER—TEN YEAR GUARANTEE

 Finally we always make the proposal that if you are in doubt yet: Let us install our Generator temporarily and turn on a light that will burn *night and day for sixty days*. This equals 1440 hours continuous service. This again is equal to *one light for three hours each night for sixteen months*.

We will pay all expenses of our STANDARD plant,—and pay also the freight and Gasoline expense of any Electric plant that desires to meet us on your farm, and attempt a continuous service along side the Great Standard Generator.

You will then have no doubt whether to pay about \$800 for a small sized *Electric* or about \$500 for the Largest and Best *Carbide Plant* complete. Write to us.

(See address on other side)

We would suggest that you approach a prospect in a case of this kind in the following manner:

First, find out his mental attitude, that is, whether with the service given by his first battery. If he is said to spend \$90.00 to \$100.00, say every two years, for a new battery, sell the same size battery he had, which would be our opportunity. The chances are, however, if he got only two years out of the old battery, that he is very much dissatisfied, especially if agents are claiming 8 to 10 years life for the batteries. We have the opportunity to explain the advantages of a 134 ampere hour battery. The following arguments may be used that he should purchase the larger size:

First: Unless he does purchase a larger size, he will have a longer life than obtained from his first battery.

Second: Yearly cost of operation. Assuming that a battery is 360 cycles; that through abuse an 80 ampere hour battery will give 150 cycles; and that the man's conditions are such that a 134 ampere hour battery will give 3 days' service on one charge, the yearly cost may be made.

Type PA-7, 80 ampere hour capacity, List Price \$100.00, at 10% discount, \$90.00. 150 cycles extended over 1 1/2 years, equals 450 days or 1 1/4 years. Annual cost of battery, \$120.00. Type PA-11, 134 ampere hour capacity. List Price \$134.00, at 10% discount, \$120.60. If an 80 hour battery is replaced by a 134 ampere hour will last five days. 360 cycles per year, a 134 ampere hour will last five days or five years. Period of five days each, equals 1800 days or five years. Total cost, \$255.00. Saving of \$48.50 per year by purchasing a 134 ampere hour battery.

Third: Don't forget that a Willard battery will give you a service which goes with it, will outlast other inferior makes and conditions.

Additional arguments, although of minor importance, are as follows:

Fourth: The 134 ampere hour battery will not heat up as much as the 80 ampere hour battery. Consequently less attention is needed.

Fifth: The voltage regulation obtained from a large battery is much better than from a small one. This results in better light, especially near the end of discharge.

Sixth: More power in reserve which can be used to advantage on special occasions.

The above arguments, if properly presented, should get the order. To further assist you, the following cautions should be kept in mind.

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H. S. Bentley, Mgr. of Agencies.

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(See address on other side)

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Alan O'Bright

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